

REMARKS

A copy of FIG. 8a, thought to have been in the application as filed, is included in case the original sheet was omitted from the application as filed. FIG. 8a is fully described in the paragraph spanning pages 11 and 12 of the specification. The allowance of claims 7, 8, 12, 13, 18-20 and 23-30 and the allowability of claims 31 and 33 is noted. Claims 1-6, 9-11, 14-17, 21, 22, 32 and 34 are presented for reconsideration in the light of the following remarks and authorities.

Claims 1-6, 9-11, 14-17, 21, 22, and 32 stand rejected under 35 U.S.C. §102(b) as anticipated by Inagaki. The reference is said to disclose a method for spatially modulating radiation, with specific reference to the abstract and FIG. 3, comprising: directing at least one radiation beam, with specific reference to column 5, lines 51-53 and column 7, lines 31-41, FIG. 3, L, upon at least one surface acoustic wave diffractive element, with specific reference to column 7, lines 33-36, FIG. 3, 38, and driving at least one of the surface acoustic diffractive elements with a plurality of modulating signals, with specific reference to column 7, line 55-column 8, line 14, FIG. 3, 37, to generate a plurality of independently modulated output radiation beams having parameters, with specific reference to column 7, line 55 - column 8, line 14, FIG. 3, L1, L2 and L3. Regarding claim 2, the reference is said to further disclose a modulating signals being electrical, with specific reference to column 7, lines 55-56, FIG. 3, 37. Regarding claim 3, the reference is said to disclose the driving comprising modulating at least one output radiation beam parameter selected from the group consisting of the direction, with specific reference to column 7, lines 36-41, FIG. 3, the amplitude, phase and frequency of the modulated output radiation beams.

Regarding claim 4, the reference is said to disclose the driving comprising the application of a plurality of separate modulating signals for each surface acoustic wave diffractive element, with specific reference to column 7, lines 55-57.

Regarding claim 5, the reference is said to disclose at least one of the modulating signals being characterized by a plurality of frequencies, with specific reference to column 7, lines 55-57.

Regarding claim 6, the reference is said to disclose a laser directing the radiation beams, with specific reference to column 5, lines 51-53 and column 7, lines 31-41.

Regarding claim 9, the reference is said to disclose the modulated output radiation beams directed upon photosensitive materials, with specific reference to column 9, lines 39-54, FIG. 5, 8.

Regarding claim 10, the reference is said to disclose an apparatus for spatially modulating radiation, with specific reference to the abstract, FIG. 3, comprising at least one surface acoustic wave diffractive element, with specific reference to FIG. 3, 3, each element said to inherently have a surface, at least one transducer surface acoustic wave, with specific reference to column 7, line 57, FIG. 3, 33, a source of a plurality of modulating signals driving the at least one transducer to transduce a surface acoustic wave in the surface of at least one of said surface acoustic wave diffractive elements, with specific reference to column 7, lines 24-30 and line 55 - column 8, line 14, FIG. 3, 37, a source of at least one output radiation beam constructed and arranged so that at least a portion of the input radiation beam strikes a surface acoustic wave diffractive element from outside the surface of that surface acoustic wave diffractive element, with specific reference to column 7, lines 31-41, FIG. 3, L, and a plurality of modulated output radiation beams modulated by respective ones of the modulating signals, with specific reference to column 7, lines 43-59, FIG. 3, L1, L2 and L3.

Regarding claim 11, the reference is said to disclose the source of radiation being a laser, which it is said would inherently have a cavity. Regarding claim 14, the reference is said to disclose at least one surface acoustic wave diffractive element having an active area, with specific reference to column 7, lines 24-30, FIG. 1, 32.

Regarding claim 15, the reference is said to disclose the active area being piezoelectric, with specific reference to column 6, line 66 - column 7, line 8, FIG. 1, 32.

Regarding claim 16, the active area of the reference it is said would inherently have a reflectivity greater than zero this being reasonably based upon the reference disclosing the input laser beam being deflected, with specific reference to column 7, lines 31-41.

Regarding claim 17, the active area of the reference it is said would inherently have a transmissivity greater than zero, this it is said being reasonably based upon the indicated

piezoelectric materials, with specific reference to column 7, line 7, having well-known transmissive characteristics as well as the reference disclosing the transmitted beam O in FIG. 3.

Regarding claims 21 and 22, the reference is said to disclose the transducer comprising interdigital electrodes, with specific reference to column 7, lines 9-13, FIG. 3, 33, deposited on top of a piezoelectric substrate, with specific reference to column 6, line 66 - column 7, line 8, FIG. 1, 32 and being regularly spaced, with specific reference to FIG. 3, 33.

Regarding claim 32, the reference is said to disclose wherein the active area comprises at least one thin membrane, with specific reference to column 7, lines 24-30, FIG. 1, 32.

This ground of rejection is respectfully traversed.

We rely on the authorities set forth on pages 10 and 11 of the response filed 23 September 2002.

All the claims recite directing at least one radiation beam upon at least one surface acoustic wave diffractive element or at least one surface acoustic wave diffractive element. The Examiner has identified element 3 as the claimed element, but the reference identifies this element as "the optical waveguide type acoustooptic element 3," column 9, lines 33-34. That "laser beam L is diffracted by the acoustooptic element 3" does not convert this "optical waveguide type acoustooptic element 3" into a "surface acoustic wave diffractive element" called for by the claims.

The surface acoustic wave diffractive element called for by the claims is exemplified in the first paragraph of the detailed description as a reflective diffraction element involving creating a traveling surface wave in the adjacent rectangular active area on the acoustoelectric substrate with the traveling ripples in the reflective surface diffracting the incident light beam into multiple diffraction orders according to the grating equation for surface acoustic waves.

Accordingly, withdrawal of the rejection of claims 1-6, 9-11, 14-17, 21, 22 and 32 as anticipated by the reference is respectfully requested. If this ground of rejection is repeated, the Examiner is respectfully requested to quote verbatim the language in the reference he regards as identifying element 3 as a "surface acoustic wave diffractive element."

Claim 34 stands rejected under 35 U.S.C. §103(a) as being unpatentable over the reference. Regarding claim 34, the reference is said not to disclose the surface acoustic being flexural waves. However, it is said to be considered to be obvious well within the abilities of a

person of ordinary skill in the art for the surface acoustic waves of the reference to be flexural waves since it is said to be well known in the art for surface acoustic waves to exhibit flexural effects in the medium through which it traverses. This ground of rejection is respectfully traversed.

"The mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification." *In re Gordon*, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984).

Surface acoustic waves are typically defined in the field as Rayleigh waves, a class of elastic waves with very specific properties, such as the wave amplitude is much smaller than the thickness of the substrate. Flexural waves are quite different and are typically associated with thin, drum-like membranes. "A reference is only good for what it clearly and definitely discloses." *In re Hughes*, 145 U.S.P.Q. 467, 471 (C.C.P.A. 1965); *In re Moreton*, 129 U.S.P.Q. 227, 230 (C.C.P.A. 1961).

Nothing in the reference suggests the desirability of modifying what is disclosed there to create surface acoustic waves that are flexural waves. Transducers of surface acoustic waves that are flexural waves are nonobvious, and nothing in the reference suggests the desirability of modifying what is there disclosed to form such a transducer of surface acoustic waves that are flexural waves. Accordingly, withdrawal of this ground of rejection is respectfully requested. If this ground of rejection is repeated, the Examiner is respectfully requested to quote verbatim the language in the reference regarded as suggesting the desirability of modifying what is there disclosed to create a transducer of surface acoustic waves that are flexural waves.

In view of the foregoing authorities and remarks, all the claims are submitted to be in a condition for allowance, and notice thereof is respectfully requested. Should the Examiner believe the application is not in a condition for allowance, he is respectfully requested to telephone the undersigned attorney at (617) 521-7014 to discuss what additional steps he believes are necessary to place the application in a condition for allowance.